

**OC3140**  
**HW/Lab 3 Probability**

1. Suppose that auto engine cylinders fire independently and fail with probability equal to 0.1. Assuming that an engine makes a successful running if at least one-half of its cylinders fire, determine whether a 4-cylinders engine or a 6-cylinder engine has the higher probability for a successful running.
  
2. Given a normal distribution with  $m = 30$  and  $s = 6$ . Find
  - a. the normal-curl area to the right of  $x=17$ ;
  - b. the normal-curl area to the left of  $x=22$ ;
  - c. the normal-curl area between  $x=32$  and  $x=41$ ;
  - d. the value of  $x$  that has 80 % of the normal-curve area to the left;
  
3. A company pays its employees an average wage of \$9.25 an hour with a standard deviation of 60 cents. If the wages are approximately normally distributed and paid to the nearest cent.
  - a. What is the percentage of the workers receiving wages between \$8.75 and \$9.69 an hour inclusive?
  
  - b. What is the lowest hourly wage for the highest 5 % of the employees?
  
4. An electrical firm manufactures light bulbs that have a length of life that is approximately normally distributed with a standard deviation of 40 hours. If the average life is 780 hours, find a 96 % confidence interval for all bulbs produced by this firm.